cartridge 2 is inserted in its entirety into a magneto-optic recording/ reproducing device 23, as shown in Figs. 26A to 26C, to record/ reproduce the information. Between the upper and lower cartridges 3 and 5 on the sides of the cartridge 2, there is formed a slender space or slot 16 for allowing a release member 21 for releasing the later-described lock lever 18 to pass therethrough.

IN THE CLAIMS

Please **amend** claims 6 and 7 to read as follows:

6. (Amended) A disk cartridge according to claim 4 or 5, wherein the protrusion or recess of the optical disk is formed in a center hub having a center hole to be fitted on a shaft for rotating the optical disk.

7. (Amended) A disk cartridge according to claim 3, wherein the cartridge case includes an upper case and a lower case having an upper opening and a lower opening, respectively, for allowing the head for recording/ reproducing information to face the optical disk and a shutter for opening and closing the upper and lower openings, the lower case is cut to form the lower opening from a bottom face to a side face, and the shutter shields the upper opening along a plane defined by an upper face of the upper case and shields the lower opening along two planes defined by the bottom face and the side face of the lower case.

REMARKS

Claims 1 through 17 are pending in the subject application. Claims 1-2 and 4-6 stand rejected under 35 U.S.C. 102(b). Claims 7-17 stand rejected under 35 U.S.C. 102(e). Claim 3 stands rejected under 35 U.S.C. 103(a). Claims 6 and 7 have been amended.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully requests reconsideration of the subject application based on the foregoing amendments and the following remarks.

35 U.S.C. § 102(b) REJECTION

The Examiner rejected claims 1-2 and 4-6 under 35 USC 102(b) as being unpatentable over U.S. Patent No. 5,381,402 to Lee, et al. ("Lee" or the "Lee Reference"). The Applicants respectfully traverse these rejections for reasons detailed below.

Claims 1-2

The Lee reference discloses a removably-mounted, environmentally-sealed disk cartridge 30 for use with a rotary actuator disk drive 100 that provides access to the top and bottom surfaces and edge of the disk 50 through a cutout portion. See, e.g., Lee, col. 2, lines 3-9. The disk cartridge 30 comprises a U-shaped, pivotally-mounted 34 door that, in an open position, exposes that portion of a disk 50 that is contained in the cutout area 44. The shape of the cutout area 44 is such as to allow the actuator arm 111 unrestricted access to the disk 50. See, e.g., Id., FIGs. 3 and 11; col. 5, lines 59-61. Thus, Lee addresses the prior art problem of rotary actuator access. See, e.g., Id., col. 1, lines 46-51.

The invention as claimed teaches an optical disk cartridge comprising an optical disk 101 and a notched cartridge case 3. The purpose of the notch 10 to allow a head arm of a disk drive device to be configured and arranged closer to the disk 101 in the cartridge plane, which enables reducing the size of the disk driving device. See, Application, page 19, lines 1-8; page 25, line 24 to page 26, line 1; FIG. 26a and 26c.

The Examiner asserts that the notches taught by Lee 35, 36, and 39 are the equivalent of the notch 10 of the present invention. However, the Lee notches are positioning notches, which do not perform the same function as the notch 10 of the present invention. Notches 35 and 36 "properly position the cartridge when inserted in a disk drive." See, e.g., col. 3, line 67 to col. 4, line 5. Further, door notch 39 is structured and arranged to receive pin 80 at the end of the pivotally mounted opening lever 130, which rotatably opens the door 34 as the disk cartridge 2 is inserted in a disk drive 100. See, e.g., col. 5, lines 45-49. Accordingly, the Applicants respectfully maintain that Lee does not teach, mention or suggest a notch 10 that allows the arm of a disk drive device to be configured and arranged closer to the disk, which enables reducing the size of the disk driving device. Moreover, Lee's notches do not allow the arm of a disk drive device to approach the disk as claimed.

Furthermore, the Applicants assert that the Lee reference actually teaches away from shutter-type doors 8 of the invention as claimed. Lee FIG. 1 illustrates an exemplary embodiment of the prior art door mechanism 14 that translates rather than rotates. The embodied shutter means of the present invention opens by translation and not rotation. See, e.g., Application, page 23, line 15 to page 24, line 5; FIGs. 14a-14c.

Claims 4-6

A problem in the prior art addressed by the present invention is the degree of freedom of the disk. In particular, during loading operations, as the distance between the hub 6 and spindle 8 increases, the center hub 6 and spindle 8 of the motor fail to fit snugly. With greater separation, loading efforts can fail if the center hub 6 and spindle 8 contact one another. Determining factors of failure can include the free stroke of the disk, i.e., the degree of freedom of the disk, the diameter of the center hole, and the diameter of the spindle. These problems become more acute as diameter of the spindle 8 decreases, which, for the present invention, is desirable to further reduce the size of a disk drive device. Id., page 5, lines 5-20.

A

The Examiner maintains that the access hole 52 and notches 35, 36 and 39 are the equivalent of the recesses 14 and protrusions 15 of the invention as claimed. The Applicants respectfully assert that this position is untenable. See, e.g., FIGs. 17 and 18; Id., page 16 to page 29, line 11.

Claim 4 of the present invention comprises (1) a cartridge case that has a recess or protrusion on an inner wall of the case facing the optical disk and (2) an optical disk that is provided with a protrusion or recess corresponding to the recess or protrusion of the cartridge case. In short, either the optical disk has a recess that corresponds to a protrusion in the cartridge case or the optical disk has a protrusion that corresponds to a recess in the cartridge case. Lee does not do this.

Lee's access hole 52 (a recess) does not have a corresponding protrusion on the optical disk. Furthermore, Lee's notches 35, 36, and 39 do not have corresponding protrusions on the optical disk. As stated before, the notches 35, 36 and 39 are used to position the cartridge 30 in the disk drive device 100; hence the protrusions needed to fix the cartridge 30 are external to the cartridge 30 and cannot be on the optical disk. Moreover, according to the Lee reference, a pair of magnets 54 and 162 and a corresponding pair of steel washers 57 and 51 restrain freedom of movement. See, e.g., Lee, col. 6, lines 11-53; FIGs. 13 and 14.

More particularly, the prior art does not teach tapering the protrusions or recesses to facilitate the insertion of the protrusion 15 in the recess 14 while also providing a tight fit between the center hub 6 and spindle 8.

It is respectfully submitted that, for the foregoing reasons, claims 1-2 and 4-6 are not made obvious by the Lee reference and, further, satisfy the requirements of 35 U.S.C. 100, et seq. As such, the Applicants believe that claims 1-2 and 4-6 are allowable. Moreover, it is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

35 U.S.C. § 102(e) REJECTION

The Examiner rejected claims 7-17 under 35 USC 102(e) as being anticipated by U.S. Patent No. 5,903,542 to Sandell, et al. ("Sandell" or the "Sandell Reference"). The Applicants respectfully traverse these rejections for the reasons provided below.

With respect to claims 7-12, claim 7 has been amended to depend from claim 3. As such, the Applicants believe that claim 7 and claims 8-12 depending therefrom are allowable.

With respect to claims 13-14, claim 13 includes the following limitation:

13. * * *

> a second opening region extending from the first opening region in a radial direction of the disk to the outside of the disk,
> an edge of the second opening region on a side in a shutter closing direction in which the shutter closes is formed toward the shutter closing direction as compared with the first opening region and an edge of the second opening region on a side in a shutter opening direction in which the shutter opens is formed toward the shutter closing direction as compared with the first opening region [ ].

The Sandell reference, however, teaches a second opening region having an edge on a side of the shutter closing direction that is formed toward the shutter closing direction and an edge on a side of the shutter opening direction that is formed toward the shutter opening direction. See, e.g., Sandell, FIGs. 38 and 39. Moreover, the outline of the shutter 61d is substantially the same as the outline of the second opening region. Accordingly, the cartridge taught by Sandell cannot reduce its size because the outline of the opening is enlarged toward a closing and an opening direction as well as toward the shutter.

In contrast, according to the invention as claimed, a second opening region is shifted towards a direction in which the shutter closes in comparison with the first

A

opening region, and the second shutter region is shifted toward the same direction in comparison with the first shutter region. Accordingly, a spindle motor and pickup can be allowed to approach the first and second opening regions with displacement while allowing reduction in size. See, e.g., Application, page 36, line 15 to page 38, line 10.

Accordingly, it is respectfully submitted that, for the foregoing reasons, claim 13 and all claims depending therefrom are not anticipated by the Sandell reference and, further, satisfy the requirements of 35 U.S.C. 100, et seq. As such, the Applicants believe that claims 13-14 are allowable. Moreover, it is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

With respect to claims 15-16, claim 15 includes the following limitation:

> 15. * * *
> the second opening region is formed toward a direction in which the shutter closes as compared with the first opening region, and
> the second shutter region is formed toward the direction in which the shutter closes as compared with the first shutter region.

However, Sandell teaches a second opening region that is formed in two directions: a direction in which the shutter closes and a direction in which the shutter opens. See, e.g., Sandell, FIGs. 38 and 39.

In contrast, referring to FIG. 20c of the present invention, there is shown a shutter 9 having a first opening region 33a and a first shutter region 34c and a second opening region 33b and a second shutter region 34d. As the figure shows, the second opening region 33b and the second shutter region 34d have an edge that is formed in a direction in which the shutter 9 closes, i.e., towards the top of the page, while the first opening region 33a and the first shutter region 34c that have an edge that is formed in a direction in which the shutter 9 opens, i.e., towards the bottom of the

A

page. Accordingly, as claimed, the second opening region 33b is formed toward a direction in which the shutter 9 closes as compared with the first opening region 33a, and the second shutter region 34d is formed toward the direction in which the shutter 9 closes as compared with the first shutter region 34c. This is neither taught nor suggested by the Sandell reference.

Accordingly, it is respectfully submitted that, for the foregoing reasons, claim 15 and all claims depending therefrom are not anticipated by the Sandell reference and, further, satisfy the requirements of 35 U.S.C. 100, et seq. As such, the Applicants believe that claims 15-16 are allowable. Moreover, it is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

With respect to claim 17, Sandell teaches a protective disk cartridge with several embodiments of a slidable door with shutters that protect and provide access to the top and bottom surfaces of the disk in a closed and open position, respectively. However, Sandell does not teach a third opening and a fourth opening, which are formed separately from each other on a common face. The third opening 30 and a fourth opening 60 referred to by the Examiner are disposed on opposite sides of the disk.

Accordingly, it is respectfully submitted that, for the foregoing reasons, claim 17 is not made obvious by the Sandell reference and, further, satisfies the requirements of 35 U.S.C. 100, et seq. As such, the Applicants believe that claim 17 is allowable. Moreover, it is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

A

35 U.S.C. § 103(a) REJECTION

Examiner rejected claim 3 under 35 USC 103(a) as being unpatentable over U.S. Patent No. 5,381,402 to Lee, et al. ("Lee" or the "Lee Reference"). The Applicant respectfully traverses this rejection for reasons detailed below.

For the reasons provided above showing that the Lee reference does not anticipate the invention as claimed, the Lee reference also cannot make the present invention obvious. Therefore, it is respectfully submitted that, for the foregoing reasons, claim 3 is not made obvious by the Lee reference and, further, satisfies the requirements of 35 U.S.C. 100, et seq. As such, the Applicant believes that claim 3 is allowable. Moreover, it is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

The Applicant believes that no additional fee is required for consideration of the within Response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,

Date: June 26, 2002

By: _____
George W. Hartnell, III
Reg. No. 42,639
Attorney for Applicant(s)

Dike, Bronstein, Roberts & Cushman
Intellectual Property Practice Group
EDWARDS & ANGELL, LLP
P.O. Box 9169
Boston, Massachusetts 02209
(617) 517-5523
192939

A

OIPE JC#1
JUL 0 2 2002
PATENT & TRADEMARK OFFICE

MARKED-UP VERSION OF AMENDED CLAIMS AND

PASSAGES FROM THE SPECIFICATION

On Page 3, replace the fourth and fifth full paragraphs with the following:

On the other hand, a disk cartridge is inserted in a disk driving device (information recording/ reproducing device), so that information is recorded on and reproduced from the optical disk accommodated in the disk cartridge through a head supported by an arm of the disk driving device. Accordingly, the size of the disk cartridge affects the size of the disk driving device.

Fig. 27 shows a schematic construction of a disk device in the state where it is loaded with a disk 1 accommodated in a disk cartridge. In Fig. 27, a permanent magnet 4 is fixed on a turntable 3 of a spindle motor 2 at a portion other than a disk bearing face 5 of the turntable 3. On the disk l, on the other hand, there is fixed a center hub 7 which is made of a magnetic material and has a center hole 6. The center hole 6 is fitted on a spindle 8 of the spindle motor 2, and the permanent magnet 4 of the turntable 3 attracts the center hub 7 so that the disk 1 is pulled onto the disk bearing face 5. As a result, the disk 1 can be portion for shielding the upper and lower openings; a perpendicular portion jointing the upper and lower shutter portions; a pawl for preventing the shutter from coming off; and a guide portion extending from the perpendicular portion for slidably guiding the shutter, and the upper case is sandwiched between the guide portion and the shutter portion.

On Page 30, replace the first full paragraph with the following:

Further, in~~In~~ the disk cartridge of the present invention comprising: a disk cartridge according to claim 10, wherein the lower case is positioned on a side of a recording face of the optical disk, and the shutter includes an upper shutter portion and a lower shutter portion for shielding the upper and lower openings of the upper

A

and lower cases, respectively, and a guide portion for guiding the movement of the shutter, so that the upper case is sandwiched between the upper shutter portion and the guide portion.

On Page 30, replace the third full paragraph with the following:

An magneto-optic disk 1 to be recorded with information signals is rotatably accommodated in the cartridge 2. The upper cartridge 3 is provided with: a first opening 4 to be faced by a magnetic head 25 for recording/ reproducing the information signals; and the lower cartridge 5 is provided with a second opening 6 to be faced by a spindle motor 26 for rotating/ holding the magneto-optic disk 1 and a pickup unit 27 for recording/ reproducing the information signals. Moreover, the cartridge 2 is inserted in its entirety into a magneto-optic recording/ reproducing device 23, as shown in Figs. 26A to 26C, to record/ reproduce the information. Between the upper and lower cartridges 3 and 5 on the sides of the cartridge 2, there is formed a slender space or slot 16 for allowing a release member 21 for releasing the later-described lock lever 18 to pass therethrough.

IN THE CLAIMS

Please **amend** claims 6 and 7 to read as follows:

6. (Amended) A disk cartridge according to claim 4 or 5, wherein the protrusion or recess of the optical disk is formed in a center hub having a center hole to be fitted on a shaft for rotating the optical disk.

7. (Amended) A disk cartridge according to claim 3. ~~comprising:~~
~~an optical disk for recording/ reproducing information; and~~
~~an cartridge case rotatably accommodating the optical disk;~~
wherein the cartridge case includes an upper case and a lower case having an upper opening and a lower opening, respectively, for allowing the head for recording/

A

reproducing information to face the optical disk and a shutter for opening and closing the upper and lower openings, the lower case is cut to form the lower opening from a bottom face to a side face, and the shutter shields the upper opening along a plane defined by an upper face of the upper case and shields the lower opening along two planes defined by the bottom face and the side face of the lower case.

A